## Section V
## Conservation Effects for Decisionmaking
## Case Study 1

**Contour Strips for a Dairy Farm**

**Madison County, Farm 1**

**Resource setting:**

This is a dairy farm in southwestern Madison County. It is a 60 cow dairy with no immediate plans to increase herd size. DHIA statistics indicate good management with an increasing herd average. One statistic, purchased feed to milk revenues, was very low, for reasons that will be discussed below. Crops grown are:

| | |
|---|---|
| Corn silage: | 30 acres |
| Hay(mixed) : | 174 acres |
| | --- |
| Total tilled | 204 acres |

Like many of the farms in the rolling valleys of the the south of the county, the predominant soil association is Lordstown on C and D slopes. There are no A or B sloped fields on this farm. Consequently, the entire farm is highly erodible.

**Practices installed:**

Contour strips, short duration grazing, low-input sustainable agriculture. This last practice consists of a movement away from purchased inputs of any kind, including chemical pest control and fertilization, as well as feed. Farmer 1 believes that with proper management, most off-farm inputs can replaced with on-farm substitutes of equal quality.

**Resource Problems**

This farm can be analyzed in terms of three sites. Two were experiencing erosion and wetness problems, while one site is stripped in order to provide risk reduction and flexibility in crop production.

Site C - designated as such in aerial photos. This field was often too wet to work in the Fall and Spring. Farmer 1 would often bury tractors in the mud, rutting the field and destroying soil structure. Two tractors were normally required to chop corn; one tractor to pull the other through wet spots. Soil in the field is shallow, with only 8 inches to bedrock. Yields had been declining, with corn silage down to 10 tons per acre.

Field 6 - This field had been wet along the bottom edge, with soil building up there from past erosion. This made for an expanding wet area along the base of the field, as well as soil deposition on any crops grown. Ephemeral gullies had made crop production difficult while erosion

had hurt yields. Timeliness of operations was a major concern.

Field 4 - This field had several springs and poorly-drained soils. Soils were heavy and fairly water impermeable. There was one big wet spot in the center, which since the water always moved toward that area, never seemed to dry out completely. Corn in this area was always a poor yielder.

**Solution**

Farmer 1 installed contour strips, went to short duration grazing, and implemented low-input sustainable agriculture. Unlike many other farmers, he did not institute reduced tillage crop production.

**Effects of stripcropping**

Overall, strips have had the expected effects of decreasing erosion and eliminating ephemeral gullies. Yields across the farm have increased in seven years to nearly 20 tons per acre for corn silage. However, Farmer 1 attributes this to the use of cultivation and natural fertilizer as well as the strips, although he agrees that none of these practices by themselves could have individually had the same effect.

Site C - Strips control water flow and wet spots do not occur, a result that will be repeated for all fields. Corn is able to be planted and harvested on time. If he does get into a rare wet spot, it is only 40 to 50 feet to sod, instead of having to mud across an entire field. Because of the absence of wet spots, crops are yielding better and soil structure is preserved. Timing of operations is also better since strips offer a larger window of opportunity.

This is true since strips are more forgiving of the changes in weather. With strips, wet days are not as large a problem, since water movement is mainly down into the soil, not across it. Strips mean that it is not as crucial to perform an operation on the one day where the weather permits, convenient or not. Since the field will dry out fairly quickly, he does not worry about rain unduly.

Strips also force him to consider more closely the load he is pulling. As he harvests each strip, he is forced to decide if the silage load is too large to completely harvest another strip. This forces safer harvest practices. Equipment rollover is a major consideration on these slopes.

Field 6 - Risk reduction and flexibility are the keys here. Farmer 1 uses cows on the hay strips in some years. If the Spring is especially wet and he is concerned about

making good quality forage, he will simply let the cows themselves take the first cutting, eliminating the risk of rain-damaged hay. In addition, the low fertility levels of the field have been increased through the short-duration grazing program and the natural outcome, as it were. Yield benefits and timeliness of operations were also major concerns.

Field 4 - Strips have aided water management, turning this very wet field into an easily-worked one. With strips, water does not flow to one area of field. Water is spread more evenly across the field, allowing elimination of the major wet spot even though this spot represented a large spring.

Other information regarding practices:

Farmer 1 is changing to more well-adapted crops across the farm. He uses buckwheat in certain areas because of its tolerance for adverse soil and weather conditions. He has completely stopped using chemicals of all types. Instead of chemical weed control, he is using cultivation and interseeding with buckwheat.

He is improving his paddock system for short duration grazing. He wants to develop a natural spring to force animals to use that for water and not the stream. He also pastures heifers rotationally. His goal here is to run the heifers in the same paddocks as cows, two days after the cows have moved on.

Farmer 1 always uses a cover crop, either buckwheat or rye. This is planted after last cultivation of corn.

He is an advocate of the Rodale nutrient management philosophy. This philosophy is that the use of conventional fertilizer retards root growth since it is easy for the plant to acquire. Natural fertilizer forces root growth, which means that yields are more consistent in dry years.

**Production Activities**

Farmer 1 uses a Corn (2) Hay (6) rotation. Part of the hay acreage above is used for paddocks, as he will run cows on some of the hay strips. The paddocks presently take up about 30 acres of the hay ground, but he is thinking of reducing that acreage in the near future. This represents not a dissatisfaction with paddocks, but rather, an gain in experience. As he gets more comfortable with the paddock system, he is finding that he does not have to use as much acreage to successfully support the cows. He has reduced the acreage in paddocks to a level below that recommended by Cornell University. Farmer 1 rather

enjoys this contradiction of established wisdom.

As can be seen from his crop budget, the major difference in production activities from conventional farmers centers around corn. He uses a standard procedure up to planting (plowing, disking twice on sod ground, once on corn ground, picking stone, and planting). After planting, though, he will cultivate every 10 days, doing this three times. On the last cultivation, he will broadcast 60 to 80 lbs. buckwheat or rye. He finds that this increases his corn's crude protein.